

APP, I, 64, 3.3

5 April 1946

MEMORANDUM FOR THE FILE:

SUBJECT: Truth Drug (T.D.)

C 1/1 The following information was passed out by _____ in discussions with _____ *H* on 30 and 31 January 1946. This memorandum should be read *C* in conjunction with the notes prepared by _____ on this subject, and with the report of the OSS board which conducted clinical tests, copies of which are attached.

A. THE DRUG:

C 3 1. The Drug is a liquid acetate preparation of cannabis indicia (marijuana or hashish). It is prepared only by chemists of the _____ and is produced as an oil which has no taste, odor or color. The preparation is an involved process, done principally in the _____ Laboratory. There is no reason to believe that any other nation or group is familiar with the preparation and use of this particular drug. This drug is almost impossible to analyze, and, for this reason, there would be little danger of compromise if samples were to be obtained by any unfriendly agency. This oil is not miscible in any liquid except alcohol or similar product, and then only partially. Accordingly, it cannot normally be used in a drink as it retains its globular form, and being heavier than water will sink to the bottom. If vigorously shaken in a liquid, it will separate into tiny droplets and remain in a state of visible suspension until the droplets gradually sink. The *C 5* is now experimenting with a tincture which will allow proper proportions of the drug to be inserted into a drink.

B. PREPARATION AND ADMINISTRATION

C 6 1. At the present time the oil is prepared by the _____ in ampules of 3 c.c. Inasmuch as the maximum dose is .03 c.c. the present ampules are too large for our use, and it should be suggested that ampules of .5 c.c. capacity be prepared. The normal minimum dosage is .01 c. c. In any case, it

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has been found that the Drug must be ingested in order to be effective. This can be done either by eating, as in candy or food, or by inhalation, by means of a cigarette. It has been found that the cigarette method generally gives a quicker effect. In either case the drug is inserted into the food or tobacco by means of a hypodermic syringe. In the case of a cigarette, the needle should be thrust into the cigarette along its axis for about one inch. Slowly withdrawing the needle, the plunger should be slowly depressed so that the drug is deposited evenly along this portion of the cigarette. Care must be taken to avoid the drug seeping through and staining the paper. This procedure should be followed with both ends of the cigarette in order to insure that the minimum dosage is absorbed. It is obvious that the smoking habits of an individual will largely determine the amount of the drug which he inhales. The operator should have observed these habits in order that an adequate, but not excessive, dosage be insured. In other cases, the drug can be injected into any type of food, such as mashed potatoes, butter, saladressing, or in such things as candy. By this method a closer check can be maintained on the actual amount of the drug which is injected.

C. REACTIONS AND EFFECTS

1. The operator can look for a reaction from the cigarette method in about 15 minutes, and from the food method in about one half hour to 45 minutes. These are not always dependable rules. The time of reaction will differ with each person, and it depends considerably on the physical condition of the subject, the amount of food or liquor he has already consumed, the length of time since his last meal, etc. The operator must not become impatient if the effect is slow in appearing. Care must be taken not to administer unnecessary amounts of the drug because, although the drug will not injure the subject, it will probably cause him to lose consciousness in the same manner as one who is completely drunk, and no further questioning will be possible. An administration of from .01 c.c. to .03 c.c. will generally have an effect lasting about one hour. However, it may have been necessary for the administration to take place over 2 or 3 hours. Therefore, it is essential that an operation of this kind not be attempted unless there is reasonable certainty that there will be no interruption over a period of several hours.

2. The effects of the drug are similar in many ways to the effects produced by alcohol. The brain reacts as when intoxicated, but no delusions or hallucinations are produced as is the case in the use of drugs such as scopolamine. The drug appears to relax all inhibitions and to deaden the areas of the brain which govern an individual's discretion and criticism. It also accentuates the senses and makes manifest any strong characteristics of the individual. Sexual inhibitions are lowered, and the sense of humor is accentuated to the point where any statement or situation can become extremely funny to the subject. On the other hand a person's unpleasant characteristics may also be heightened. It may be stated that, generally speaking, the reaction will be one of great loquacity and hilarity.

3. In all cases a prerequisite for the effective use of this drug is the creation of a friendly, sympathetic, informal basis for a discussion, which should extend over a period of several hours. It must not be used on a hostile subject, but may sometimes be used on a subject who is suspicious, but not hostile. It may prove desirable to spend considerable time during previous meetings and discussions before bringing about the proper environment for the use of the drug. Some cases of its uses follow:

a. As examples of the foregoing, the story was told of a visit to a Prisoner of War Camp in Virginia where only top-notch German military prisoners were kept for interrogations. One German submarine commander, who was considered outstanding in his field, had been the sole survivor of his submarine's sinking and it was thought he had valuable information concerning: (1) the depth to which the submarine could go with safety, and (2) the morale of German submarine crews. Both of these items were of extreme interest to our Navy at the time. Many attempts had been made to obtain this information from the commander without success as he was extremely wary. At the time of the visit in question the commander was invited over to the officers' club for a few social drinks, which was more or less customary. After a few drinks and some conversation, it could be seen that while he would talk freely on most all matters, he was well aware of the fact that an attempt might be made to obtain information from him. The opportunity was found to give him a cigarette which had been loaded and after approximately half an hour had passed from the first administration, one of the company, in a round-about and innocent manner, lead up to the question of maximum depth of the submarine.

The commander, although at this time definitely under the effects of the drug, was still wary and indicated he would not give information on this point. Some time later, after two more cigarettes had been consumed, the talk was led around to morale and he freely conversed about the general lowering of morale of German submarine personnel. However, no information was ever obtained concerning maximum depth.

b. Another case is that of a notorious dope peddler and racketeer in New York City who was well-known to the operator from his days of law enforcement work. The dope peddler was telephoned and asked to come to see the operator who described himself as being connected with secret government work and who was in a position to give the dope peddler an opportunity to help his country in the War. Despite the character of the peddler, he evidently harbored some feelings of patriotism and presented himself when it was explained that it was thought his connections in Sicily could be used for espionage purposes. Conversation along this line was carried on for some time and no reference was made to any illegal activities of the dope peddler. Although the dope peddler did not drink liquor, he was persuaded to take just one liqueur to keep the operator "company". Also during the time, three loaded cigarettes had been given to him at different times. The effect was quite rapid and about 20 minutes after the third cigarette, the peddler told freely of the many illegal activities in which he had been and was then engaged concerning the smuggling of narcotics. He then also named many of his associates and officials who were also involved in this activity, although he was well aware that the person to whom he was talking was, and might be in the future, connected with law enforcement activity.

A little later the peddler complained of feeling very light-headed, as though he had had too much liquor. He discarded this explanation, however, because he had had only one drink. He did state that he had been having a little trouble with his digestion and he had not eaten for approximately 24 hours. The operator to cover up this situation convinced him that the one liqueur on an empty stomach and his fasting had made him sick and susceptible to the alcoholic fumes. He accepted this explanation.

c. Another case was one which illustrated the rule that a friendly basis must first be established and that suspicion must be allayed. This case involved the questioning of approximately 30 army officers in the space of one day. All of the officers were suspected of being Communist and the interview here being held to try to

establish the suspicion. It should be noted that because of the speed with which the interrogations were carried out, no mutuality of feeling could be first established, and also because most of the men were in fact Communists and were suspicious, their fears concerning the questioning were not quieted. Nevertheless, the drug was administered in cigarettes and five of the thirty, even under the adverse conditions, gave full information concerning their communist affiliations.

4. It must be remembered that when the effects of the drug wear off, it is probable that the subject will be completely aware of the fact that he talked freely and was possibly indiscreet. For this reason, it is desirable where ever possible to associate the use of the drug with liquor, in order that this effect will not arouse suspicion. Nevertheless, it should also be remembered that the subject subsequently may be expected to feel remorse, embarrassment or alarm over things he knows he has said. Extreme reactions in such event could be: a) flight; b) suicide, or c) personal danger for the operator. It is possible that reactions of this type might outweigh the benefits which might be gained by the use of the drug.

D. COVER

1. Inasmuch as the drug, syringes, alcohol for cleaning, are all contained in a kit, the possessor of such a kit must have a logical reason for its presence in his effects. The person in whose care the drug and the equipment is entrusted should be covered by a story, preferably backed by documentary medical evidence, which indicates that he is receiving insulin shots, self administered, allergy shots, or something similar. He should be prepared to demonstrate his cover story if the occasion demands.

E. MISCELLANEOUS

1. Tests have shown that the drug may remain potent in a cigarette for a couple of weeks and in one case it was found that considerable reaction was caused by a cigarette in which the drug had been introduced approximately six months before. As a general rule, the drug would keep even better in food unless the food itself were to spoil.

2. Possession of the drug is contrary to Federal law,

and a special license, obtainable from the Bureau of Narcotics is necessary to make legal its possession. This fact may be used to prevent the retention of this drug by persons not in the employ of the Government and who should have no access to the drug.

3. The syringe must be graduated in .01 cc. This is very important in order to measure the dosage accurately. A recommended model is that called the tuberculin syringe, which is so graduated and which has a capacity of .25 cc. After each use the syringe should be washed out with alcohol to prevent gumming. The ampules containing the drug are now packed in 3 cc containers. This is too much, and a .5 cc or smaller ampule should be developed to our request. The entire set, including cover equipment should be prepared in a small medical kit. cover equipment, should be contacted by _____ as a source of the drug and the equipment.

4. Regarding knowledge of this drug, it seems that a small number of people in _____ and _____ are aware of its existence. The drug defies all but the most expert and searching analysis, and for practical purposes can be considered beyond analysis.

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In the Spring of 1942 General Donovan assembled a group to inquire into the possibilities of developing a drug which would have the characteristic of causing a subject to whom it was administered to tell the truth about matters where it would be contrary to the interests of subject. Prominent psychiatrists, biochemists, etc.,

A collaborated under the direction of _____ of Research and Development Department of OSS in an attempt to produce such a drug. It was alleged that the Russians had such a substance and that the Germans also employed a drug in connection with the interrogation of prisoners of war. This group made extensive research on all possible drugs including scopolamine, barbituates, peyote, etc., and found none of these substances to be satisfactory for various reasons. One defect was the production of hallucinations, particularly manifested in the use of scopolamine. The committee finally decided that the most practical substance available was a derivative of cannabis Indicia (marijuana or hashish).

Chemists developed an acetate of this substance which represents the active ingredients and this is the "TD" now available. Most of the technical experiment was first carried on by _____, who was

then on the Planning Staff. Attempts were made to inject the substance into a room in a spray, but this was unsatisfactory because the carrying agent was irritating to throat and eyes. The cigarette method was then extensively used with some success, except that it was found dosage could not

- A be controlled. Later _____ and myself obtained
- B the assistance of the _____ and made extensive experiments with
- B a group of _____ personnel on the various forms of administration, the results of which seemed to indicate internal administration was the most satisfactory.

Numerous field experiments were carried on by the writer

- A in connection with the project under _____ personal direction with some success. Some success was had on projects undertaken on behalf of the _____ locally. It was found that the greatest success was achieved when an opportunity was afforded to "set the stage" in such a fashion as to lull the suspicions of the subject that he might be the object of interrogation. It was used in connection with formal POW interrogations with little or no results. It was used in connection with informal POW interrogations where some degree of "bopping" technique could be applied, with good results.
- _____

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RE P O R T

TESTIFICATION OF USE OF TD IN INTERROGATION

AIM

The object of this investigation was to discover a drug or drugs that would induce the betrayal of secret information.

On April 1, 1948, the group at _____ began work on the assigned problem of ascertaining whether tetrahydrocannabinol acetate, hereafter known as TD, is effective in extracting information during interrogation of individuals who are reluctant to yield it. Soon after this investigation was initiated, it was discovered that the effectiveness of the drug depends to a large extent on the personality and motivation of the subject being interrogated. The investigation was therefore broadened to include a study of the drug in relation to personality and motivation.

METHOD

General Plan

The General plan of the experiment was as follows: Personnel of the Office of Strategic Services who had information of a confidential or secret nature, were to be interrogated before and after the administration of TD, to determine how much of this information they could be induced to reveal. If more information could be obtained while the individual

was under the influence of TD than at other times, TD could be considered an effective agent in interrogation. In order to determine the relation of personality to the effectiveness of TD, the personality of each subject was examined by means of psychological tests and psychiatric interview.

Subjects

Forty subjects were used in this experiment, of whom twenty-four were enlisted men and sixteen officers of the Office of Strategic Services. They had been members of this organization for periods of time varying from one month to several years, and had performed duties of various degrees of importance and responsibility.

All of the enlisted men except two were sent without special instructions. They were told only that they would be psychological testing. Two enlisted men and all of the officers had been given strict instructions before submitting to the experiment. This "briefing" consisted of instructions 1) that an attempt would be made to discover what duties they had performed and 2) that they were not to divulge this information. The secret nature of their information was stressed.

Rating of subjects' personalities

A series of psychological rating instruments was administered to each subject. The results of these, together with a psychiatric interview were used to determine the

individual's structure. The following instruments were used:

1. Rorschach Test
2. Cornell Index
3. Cornell Word form
4. Goodenough Drawing-a-man-test
5. Self Rating test
6. Work Interest Blank
7. P-S Experience Blank
8. Psychiatric interview

Interrogation

Each individual was subjected to an interrogation in an attempt to discover what duties he had performed. Interrogation was carried out in an informal atmosphere before, during, and after the administration of TD.

Interrogation was recorded by means of a Dictaphone Special Electricord Recording-Reproducing Machine. The subject was not aware that his conversation was being recorded. These recordings formed a permanent record of the psychiatric interview and of the interrogation of the subjects, by means of which it was possible to ascertain the rate of speech and loquacity during any period.

Rate of speech and loquacity were ascertained by counting the number of words uttered by the subject in two minutes out of every five during the interrogation and by measuring the length of time he talked in any two minute period. By plotting these findings it was possible to present graphically the effect of TD on rate and loquacity.

PART II

Psychogalvanometer

About one-half the subjects were examined by means of the psychogalvanometer to explore the possibilities of using the technique for uncovering information not easily elicited. The technique employed was essentially that made use of in "lie detection" and will be described below.

EXAMPLE

Effective amount of TD

In an attempt to determine the optimal amount of TD, various quantities from .01 to .08 cc by inhalation and .01 to .02 cc by mouth, were administered to the forty subjects. It was discovered that by inhalation amounts from .01 to .02 cc produced little or no effect and that amounts of .08 cc were toxic in most of the individuals to whom they were given; .01 cc by mouth was discovered to be effective in four of five individuals, while a sixth developed such a severe toxic reaction after .02 cc by mouth that this quantity was not given again. The optimal amount by inhalation was found to be .04 cc in one cigarette, and .01 cc when administered in food. The amounts referred to represent the drug before dilution; in terms of the volume of solution recommended above the optimal amount would be twice those mentioned.

These quantities are average; with a few individuals they may cause toxic reactions, while with others they will be inadequate in producing the maximum desired effect on loquacity. There is no method available at present to determine which individuals will become toxic with the recommended quantities and which will require more than that recommended to obtain the optimal effect. It is, therefore, suggested that the average amount be given in all instances the first time the drug is administered.

None of the subjects used in this investigation was aware that he was under the influence of a chemical agent except in the one instance in which moderately severe toxic reactions developed.

Latent Period

When given by inhalation, the effect of TD became apparent after a latent period of between ten and twenty minutes. When given by mouth the latent period was between one-half and one hour.

Duration of action

When given by inhalation the maximum effect of TD was manifest in twenty to thirty minutes. From that time on it becomes less effective and its action almost entirely disappeared in two to three hours.

When administered by mouth the maximum effect is reached in one and one-half to two hours. This effect lasted

several hours and then gradually disappeared over the course of six to ten hours. (see table I)

Effect of Repeated Administration

When TD was given a second time by inhalation within a half to one hour, the effect was approximately equivalent to that when double the amount was given initially. (Administration by mouth was never repeated on the same day). When TD was given either by inhalation or by mouth twenty-four hours after the first administration the second was more toxic than the original even though both may have been of the same size. It would seem from these findings that the first administration sensitizes the individual to the second and that the agent should not be given a second time within twenty-four hours.

Toxic Effects of TD

While in most subjects the effect of TD was mainly to increase feelings of well being, self-confidence, amiability and loquacity, in some instances toxic reactions resulted. Thus, of forty subjects studied five had mildly toxic and three moderately toxic reactions.

The mild reactions were all in persons who had received .05 or .04 cc of TD in one cigarette and were generally manifested by slurring of speech and sometimes by sensations of warmth, restlessness or irritability.

Of the moderately toxic reactions one took the form of an acute anxiety state characterized by panic and was the result of .03 cc TD in one cigarette. It is interesting to note that while under the influence of TD this subject divulged all his secret information in a rush of talk. This subject's greatly increased loquacity while in a state of near panic, was in contrast to the decreased loquacity usually found in those whose anxiety made them cautious or unfriendly.

The second subject in this group had been given .03 cc of TD in a cigarette on the first day of his stay and again on the second day. On the second day he developed such symptoms as dizziness, gastrointestinal distress, palpitation, intense lassitude, headache, "sense of impending disaster", difficulty in concentration and serious memory defect for recent events. His loquacity was greatly decreased.

The third subject of this group was the only person to whom .02 cc was administered in food. His reaction was one of extreme and incapacitating anxiety, during which he was irritable, threatening, complained of dizziness and a feeling of "being two different people". Because of the nature of his symptoms no attempt was made at interrogation. Although he talked a great deal during the episode he gave no military information.

Effects of TD in terms of loquacity

The effect of TD on loquacity was to increase the output of words in a given period of time. This was accomplished not so much by the subject's talking faster but by his taking more of the time, that is with fewer or shorter pauses, and with less prompting. As shown in Table II for eight "normal" subjects the average rates of speech before and after TD were 3.5 and 3.7 words per second, respectively. This represents an insignificant change. The average percentage of time talked (number of seconds the subject talked, divided by the 120 seconds of the two minute period studied) however, rose from forty percent to fifty-six per cent, an increase of forty per cent. The increase in percentage of time talked ranged from nineteen percent to eighty-four per cent. In other words, subjects talked neither faster nor slower after TD, but they talked more of the time because they paused less often or for shorter periods, or needed to be stimulated less often by comments from the interrogator.

As shown in Table III in three other subjects there was either no increase or slight decrease in loquacity following the administration of TD. It is significant that while the eight subjects described above were judged to have little or no personality disturbances on the basis of psychiatric interview and psychological tests, these three were judged to have significant degrees of personality disturbances as

manifested in subject H by an immaturity personality, and in subjects L and R by both rebelliousness and hostility.

In brief, eight of eleven subjects studied had significant increase in loquacity, one had no increase and two talked less. The effect of TD then, was to increase loquacity, except in those individuals with personality disturbances manifested as immaturity, rebelliousness or hostility.

In table IV is shown the effect of repeated administrations of TD on loquacity. It will be seen in each instance that while the effect of the first administration of TD was to increase loquacity the second decreased loquacity. However, on the day after the second administration loquacity again increased.

It would then seem from these findings that small amount of TD stimulate loquacity in "normal" individuals while relatively large amounts depress loquacity.

In figures I and II are shown two typical instances of the effects of TD on loquacity.

The subject whose loquacity is shown in Figure I was given TD by Mouth (subject J). It will be seen that the day before TD the average percentage of time talked in each two minute sample was thirty-seven percent, and that after TD was sixty-eight percent, an eighty-four percent increase.

This increase resulted because the subject's average level of talk after TD was at the level of output that represented his maximum before TD. Thus, the highest percentage of time talked in any two minute period before TD was eighty-four percent and after TD was eighty-seven percent. However, before TD the subject was extremely variable in his output; the percentage of time talked in each two minute period varied from seven to eighty-four. After TD he consistently talked at the high level, the seconds talked in each two minute period varying from fifty to eighty-four. This is shown in another way by the standard deviation of twenty-three before TD and ten after; and by the coefficient of variability of fifty-one before and twelve after. These statistical data indicate that before TD the subject sometimes talked a great deal and sometimes very little, while for some time after the administration of TD the predictably talked a great deal.

In figure II is shown the loquacity of a subject (Subject S) who was given TD by inhalation. It will be seen that in this subject there was an increase of sixty percent in loquacity - from an average of thirty-eight percent of the two minute sample spoken before TD to a peak of sixty-eight percent after TD. This increase was reached in twenty minutes. Following this increase there was a gradual decrease in loquacity to thirty percent of the two minute sample, which was reached eighty minutes after the administra-

tion of TD.

Effects of TD on self-confidence and rapport

From the point of view of interrogation an important effect of TD was the induction of a feeling of self-confidence and security. During the period that the subject was under the influence of TD they acted as if they were in command of the situation, and as if they had the ability to discuss forbidden topics without revealing important material. This was confirmed by the comments of the subject in response to the question, "Did you feel differently on any day that you were here?" A typical response was, "On -- naming the day-- I felt very self-confident and as if I could make you do what I wanted." The day mentioned was in all cases the day on which TD had been given. This effect is similar to that produced by moderate amounts of alcoholic beverages. It was during the period in which the subject had such self-confidence that he revealed significant information.

The following are examples of one manner in which information was revealed. Subject H., a Quartermaster Corps officer, while under the influence of TD and at a time when he was exceedingly loquacious, unwittingly imparted the information that he had attended the Office of Strategic Services School in Wyoming. Since the school had been in operation only at a time when the subject claimed that he was abroad the disclosure of his attendance at this school constituted a break in his cover story.

Subject B, a medical officer, tried to convince the interrogator that he worked with Chinese guerillas to teach them medical practices. However, while under the influence of TD he told a story of how he kept the venereal disease rate low among his troops. He was especially explicit in what he did with troops fresh from America. It was obvious from this information, therefore, that this officer's duty consisted of work with American troops and not with Chinese guerilla's. Shortly after telling this story the subject apparently realized that he had revealed information and attempted a cover story. It is significant that without TD he did not discuss any similar military or medical experience that might have revealed his duties.

The relation of personality disturbances to interrogation with and without TD

Each subject was rated by the investigators on sixty-four items of anamnestic and personality data. The criterion used to judge the effectiveness of TD was whether or not more information had been obtained with than without TD. This criterion was used regardless of whether the interrogator had correctly interpreted the information given.

Tabulations of the amount of military information obtained from "normal" individuals and those with neuroses revealed that information was more readily obtained from subjects who were sociable, cheerful and had outgoing

personalities. It was more difficult to obtain information from subjects whose anxieties made them cautious and unfriendly. The reason for this is probably that those without personality disturbances can feel enough self-confidence to be willing to risk discussing significant topics, while those who are anxious are unwilling to take this risk.

It should be stated here, however, that this investigation was carried out only on a small group of subjects in lower echelons. Whether persons of greater responsibility would be affected in the same way is not known.

Part II. The use of the psychogalvanometer as a technique for the detection of concealed information.

Method.

The Sommer-Fordham apparatus consisting of a Pathometer and an Esterline-Angus continuous recorder was used.

The subject was comfortably seated with his back to the apparatus. Zinc electrodes (2 x 3 cm) were attached to the palm of the hand and brachial surface of the forearm. These were kept in place by means of elastic bands, and good contact further insured by facing the electrodes with electrode jelly.

The resistance of the subject and other base readings were noted, and the nature of the experiments explained to him.

In each trial the galvanometric readings were taken to the nearest microampere deflection and ranked as regards magnitude of galvanic response.

As in all experiments with the psychogalvanometer, it was assumed that those stimuli eliciting the greatest galvanic response were most significant affectively to the subject. In addition, two other criteria were utilized: a) the consistency of the subject's verbal response, and b) the attenuating effect of repetition of stimuli in successive trials. As in "lie detection" experiments it was assumed that those stimuli to which the subject gave false responses were those which showed relatively small decrease in galvanometric reaction in successive trials.

Following each experiment the readings on the recording tape and Pathometer were transcribed to record sheets, together with the subject's verbal response.

Subjects were studied under two experimental conditions. These are subsequently designated as the "number experiment" and the "information experiment".

A. Number Experiment

In this experiment, which was usually carried out first, the subject was asked to keep in mind and note on a sheet of paper a number from one to ten. This number was not made known to the operator. The subject was told that the operator would try to discover the number. The subject

was instructed to answer "yes" or "no" when he was asked if he were thinking of a particular number, not necessarily truthfully but with the intention of confusing the operator. The operator spoke each number in turn, repeating them for several trials. As each number was called the response on the psychogalvanometer and the spoken response of the subject were noted. The number consistently evoking the greatest response from the apparatus was usually found to be the one chosen by the subject.

These experiments were carried out at least once and more often two or three times, both before and after the administration of TD.

Each subject had brought with him a list of five places where he had worked and five jobs he may have done. One of each of these was true, the others false. It was the object of this experiment to determine the correct area and activity by means of an interpretation of the response of the subject to questioning, as indicated on the psychogalvanometer.

The subject was prepared as for the number experiment. The operator then asked twenty questions concerning the five areas and the five activities. The verbal response and the action of the psychogalvanometer were noted.

Results

A. Number experiments

The procedure described above was carried out on ten subjects both before and after the administration of the drug.

In two individuals in whom it was possible to draw the correct conclusion on the basis of galvanometric readings in 100% of the trials before the administration of the drug, this was possible in only fifty percent of the trials after the administration of TD.

In one individual whose numbers were ascertained in 100% of the trials before the administration of TD it was not possible to draw the correct inference on the basis of psychogalvanometric readings after the administration of TD.

In three individuals in whom the correct number could be postulated on the basis of psychogalvanometric readings in fifty percent of the trials before the administration of TD, this was possible in 100% of the trials after the administration of TD.

In one individual in whom correct inferences based on the readings of the psychogalvanometer were never possible before the administration of TD, they were possible in 100% of the trials after the administration of TD.

Of two individuals whose numbers were correctly ascertained in 100% of the trials before the administration of TD this accuracy was maintained after the administration of the drug.

In one individual it was not possible to draw the correct conclusion on the basis of psychogalvanometric readings either before or after the administration of TD.

Before the administration of TD it was possible to ascertain on the basis of psychogalvanometric readings, the correct number in at least fifty percent of the trials in eight of the ten subjects.

After the administration of TD it was possible to ascertain on the basis of psychogalvanometric readings, the correct number in at least fifty percent of the trials in eight of the ten subjects.

The average percentage of accuracy for each group of eight subjects in whom it was possible to draw the correct conclusion on the basis of galvanometric readings in at least half of the trials, was found to be eighty-one percent in the eight tested before the administration of TD and eightyseven percent in the eight tested after the administration of TD.

In all, 14 subjects were tested before the administration of TD. In fifty percent of the subjects the correct inference was always drawn on the basis of psychogalvanometric

readings; in eighty-six percent in half of the trials; and in fourteen percent never.

In all, thirteen subjects were tested one to three hours after the administration of .03 - .06 cc of TD by inhalation or .01 cc by mouth. In sixty-one percent of the subjects the correct conclusion was always drawn on the basis of psychogalvanometric readings; in seventy-seven percent in half of the trials; and in twenty-three percent never.

The following is a summary of the fifty-one number experiments performed on seventeen subject, when the presence or absence of the drug is ignored: In sixty-six percent it was possible to draw the correct conclusion on the basis of psychogalvanometric readings. In thirty-four this was not possible.

This, while there is a better than chance possibility of ascertaining numbers by means of response on the psychogalvanometer, it will be seen that the use of TD is of no value in increasing the usefulness of this technique. It will be noted that in two-thirds of the trials on seventeen subjects, it was possible by means of the psychogalvanometer to ascertain the number the subject had chosen and was trying to hide. It will also be seen that TD has no influence on determining the frequency with which it was possible to ascertain which number the subject had chosen, and that there was no correlation between the frequency with which the number of a single individual was ascertained before and

after TD. There was more often a change, either an increase or a decrease (70%) than a consistency (30%) in the frequency with which it was possible to ascertain an individual's number after TD.

B. Information experiments

Seventeen subjects were examined by means of the psychogalvanometer.

Of two individuals tested both before and after the administration of TD correct conclusions about the area and activity were drawn on the basis of psychogalvanometric readings in one. In the other this was not possible.

Of seven tested before or at least twenty-four hours after the administration of TD, correct inferences were drawn about the area and activity on the basis of the galvanometric readings, in four. In two, either the area or activity was ascertained and in one the response of the psychogalvanometer was entirely misleading.

Of the eight subjects tested one to four hours after the administration of .03-.06 cc of TD by inhalation or .01 cc by mouth all information was ascertained on the basis of galvanometric readings in four. In the other four either the area or activity was ascertained.

DISCUSSION

All skillful examiners know and make use of the fact that interrogation is facilitated if the subject can be made to overcome his suspicions and look on the examiner in a friendly fashion. Rapport results in loquacity and loquacity usually results in the betrayal of guarded information.

Since loquacity is affected by the attitude of the individual toward the person to whom he is talking, any drugs used in interrogation should be used in conjunction with the tried and effective methods of conducting such inquiries. It is obvious, for instance, that the efficacy of a drug can be destroyed if the subject becomes hostile to and suspicious of the examiner and therefore silent. Thus, one subject had been talking volubly for almost two hours. At the end of that time he was told that there was one topic he had been avoiding and that this made it appear that this topic was important. Almost immediately the subject stopped talking and it became exceedingly difficult for an hour thereafter to induce him to discuss even the most innocuous topics.

The chemical substance most widely used in facilitating interrogation is alcohol. Like alcohol, ID is effective in facilitating interrogation in that it encourages

similarity and self-confidence, thus establishing rapport, and directly stimulates loquacity. Another advantage of TD is the fact that because of its tastelessness, and effectiveness in small doses, it can be administered without the knowledge of the subject. Not only has alcohol some of the disadvantages of TD -- marked variability in individual susceptibility and the development of "drunkenness" it may also engender suspiciousness in the individual being plied with drink.

With the subject's hostility and suspiciousness lulled, he can be induced to discuss indirectly information he wishes to hide. As in a psychotherapeutic interview, or when under the influence of alcohol, the subject under the influence of TD embarks on a conversation which is continued even when guarded material is approached, as long as he is not aware of this approach. Thus, the material should be uncovered slowly and indirectly. When he becomes conscious of danger, and the fact that his guard of the secret information is threatened, the subject becomes silent. For this reason direct questions should be avoided, except where in the judgment of the interrogator they are appropriate.

Interrogation is facilitated when the subject has feelings of resentment about his Army experience since these feelings make him less sensitive to inner warnings that he should not discuss secret information and make him more

amenable to having the conversation channelized in desired directions. This is especially true if the subject welcomes an opportunity for mental catharsis.

TD, like alcohol, should be administered only after some measure of rapport has been established. It is more effective when it is administered during an interrogation that is carried out in a relaxed and informal social situation rather than in a formal military or civilian interrogation.

In the experiments reported here the establishment of rapport with all subjects was facilitated by the fact that the examiners were not the enemy, and by the subject's knowledge that betraying information to the experimentors was not as dangerous as betraying it to the enemy. This indicates that the drug would lose some of its effectiveness if the subject were being interrogated by an enemy agent, as long as the subject remained hostile and suspicious.

The inferences from these observations must, unfortunately, be limited since the work had to be discontinued before suitable comparison of the effect of TD could be made with those of caffeine, benzedrine, scopolamine and the barbiturates.

SUMMARY

1. Experiments were performed to ascertain whether TD facilitated interrogation.
2. TD was found to increase loquacity. This increase averaged forty percent with a range of from nineteen to eighty-four percent.
3. In addition, TD improves rapport, and increases self-confidence and feelings of security in the subject, so that he believes he can engage in conversation without betraying confidential or secret information. TD induces the subject to relax his guard and to betray information, usually indirectly.
4. In this limited study anxious, cautious and obsessive persons were found to reveal information less often than those without such personality disturbances. In a few subjects with personality disturbances manifested by immaturity, hostility and rebelliousness it was found that loquacity decreased after the administration of TD.
5. TD can be compared in action and effectiveness in interrogation to alcoholic beverages. It has an added advantage in that it is administered without the knowledge of the subject since it is tasteless and effective in small amounts.
6. While there is some evidence to indicate that the psychogalvanometer can be useful in uncovering information, TD does not increase this usefulness.